REMARKS

Claims 1-34 remain pending in the application. Reconsideration is respectfully requested in light of the following remarks.

Section 103(a) Rejection:

The Examiner rejected claims 1-7, 10, 11, 14, 15, 18-24, 27-32 under 35 U.S.C. § 103(a) as being unpatentable over Doyle (U.S. Patent 6,009,455) in view of IEEE Conference Proceeding "When Peer-to-Peer comes Face-to-Face: Collaborative Peer-to-Peer Computing in Mobile Ad Hoc Networks", by Kortuem et al., published in First International Conference on Peer-to-Peer Computing proceedings, August 2001, Pages 75-91 (hereinafter "IEEE"). Applicants respectfully traverse this rejection for at least the reasons below.

Doyle's system would be recognized in the art as a **conventional** *grid computing system* as disclosed in the Background section of the instant application. As further explained below, Doyle (whether considered alone or in combination with IEEE) simply describes the same sort of **conventional** grid computing system that is described in the Background section of the present application. The IEEE reference pertains to decentralized ad hoc mobile peer networks. Doyle and IEEE do not teach or suggest Applicants' claimed invention, as further shown below.

Contrary to the Examiner's assertion, the cited references, alone or in combination, do not teach or suggest *a grid comprising one or more compute nodes already configured to participate in the grid; a node, wherein when the node is not configured to participate in the grid as a compute node, the node is configured to discover the master node in accordance with one or more peer-to-peer platform protocols and, in response to said discovering the master node, send information about the node to the discovered master node in accordance with the one or more peer-to-peer platform protocols.* The Examiner cites Doyle, reference character 12 in Fig. 2a (as

the "client control program"), and Doyle, col. 3, line 64 - col. 4, line 10 as "sending information"). However, the Doyle reference clearly discloses that Doyle's "client computers" (reference character 11 in Fig. 2a) are already configured as "compute nodes" in Doyle's "grid". In Fig. 2a and in the other Figures and accompanying descriptions, Doyle's "client computers" are always illustrated and described as including the "client control program". At col. 3, lines 50-52, Doyle states (emphasis added):

> The client computer 11 is a computer connected to a generic local or wide area network. **On the client computer** is a small application-independent **client control program** 12 that executes when the client computer is not in normal use.

Doyle describes the client control program in the Abstract:

> An application-independent client control program reports availability of client computers, downloads application program files, invokes the application to compute partial results for a range of computation segments, and uploads the partial results to the master computer.

Doyle's description of the client control program, in the above citations and elsewhere, makes it clear that Doyle's client systems are purposefully pre-configured as "compute nodes" in Doyle's grid system. In contrast, the "node" recited in claim 1, at discovery of the master node, is not configured as a compute node in the grid computing system.

Doyle discloses at col. 4, lines 16-20, in reference to Fig. 2b:

> Each available client sends an availability signal 16 via the network to the master control program. The availability signal indicates the availability of the available client 17 as well as any resource information gathered by the availability algorithm.

Doyle discloses that the "available clients 17" of Fig. 2b are the same clients as the "client computers 11" illustrated in Fig 2a at col. 4, lines 14-16:

> An available client 17 is the same computer as the client computer 11 after the availability algorithm has determined that it is indeed available.

Thus, Doyle's "available client 17" that sends an availability signal 16 to the master control program indicating the availability of the available client 17 as well as any resource information gathered by the availability algorithm is purposefully pre-

configured as a "compute node" in Doyle's grid. In contrast to Doyle, the *particular node discovering the master node and sending information about the node to the discovered master node*, as recited in claim 1 of the instant application, is not yet configured as a compute node in the grid computing system.

The Examiner relies on the IEEE reference to teach discovering the master node of the grid. **However, neither Doyle's nor IEEE's teachings (whether considered alone or in combination) pertain to or are suggestive of a grid in which some nodes are already configured to participate in the grid as a compute node, and another node not already configured to participate in the grid as a compute node discovers the master node.** Furthermore, IEEE explicitly teaches away from discovery of a master node according to a peer-to-peer platform protocol. In contrast, IEEE specifically teaches discovery fro decentralized mobile peer networks. IEEE states that decentralization "is not a mere option for mobile peer-to-peer networks, but a necessity." (see last paragraph of section 3.3.4 cited by the Examiner). Thus, one or ordinary skill in the art would not seek to combine the teachings of IEEE with Doyle since IEEE explicitly teaches away from master node discovery. Moreover, such a combination would make no sense because the nodes in Doyle are already configured as compute nodes. There would be no reason for a node in Doyle to discover the master node to obtain grid configuration information for self-configuration as a compute node. The nodes in Doyle's grid are already configured a compute nodes. Neither Doyle's nor IEEE's teachings (whether considered alone or in combination) pertain to or are suggestive of a grid in which some nodes are already configured to participate in the grid as a compute node, and another node not already configured to participate in the grid as a compute node discovers the master node.

Even if the teachings of IEEE were applied to Doyle, it would not result in Applicants' claimed invention. IEEE teaches a mobile peer discovering another decentralized mobile peer to form a ad hoc network. At most, applying these teachings to Doyle would result in one compute node discovering another peer compute node, not the master node. Moreover, as discussed above, neither reference has anything to do with a

node discovering the master in order to obtain grid configuration to self-configure itself as a compute node in the grid.

Also, the teachings of IEEE pertain to the formation of ad hoc decentralized peer networks. The term "ad hoc" refers to something done for a particular purpose only when the situation makes it necessary or desirable, rather than being arranged in advance or being part of a general plan. The grid in Doyle is not an ad hoc system. Thus, the teachings of IEEE would not pertain to Doyle's system. The concept of ad hoc discovery makes no sense in the context of Doyle.

Furthermore, the cited art, alone or in combination, does not teach or suggest *a node, in response to discovering the master node, sending information about the node to the discovered master node.* Doyle discloses, at col. 3, lines 58-61 (emphasis added):

> When the client control program is initially activated or is in the idle state, it executes an availability algorithm. The primary function of the availability algorithm is to notify the master computer that the client is available.

Clearly, Doyle does not teach or suggest, in this citation or elsewhere, that the availability algorithm sends information about the client computer 11 to the master computer **in response to discovering the master computer**. To the contrary, Doyle explicitly teaches that the client control program sends availability (and other) information to the master computer when the client control program is initially activated or is in the idle state. Furthermore, Doyle does not teach or suggest that a client computer 11 would have any need to discover the master computer 5. Doyle discloses that the client computer 11 is pre-configured with a "client control program 12". The above citation discloses that the availability algorithm on Doyle's client computer 11 notifies the master computer that the client is available "when the client control program is initially activated or is in the idle state". Doyle's client computer 11 is already aware of the master computer 5, and thus it would not be necessary for Doyle's client computer to perform any discovery operation in accordance with a peer-to-peer platform protocol to discover the master computer.

The cited references, alone or in combination, do not teach or suggest *a **node** discovering the master node and, in response to said discovering the master node, sending information about the node to the discovered master node.* The Examiner acknowledges that Doyle does not disclose *discovering the master node in accordance with one or more peer-to-peer platform protocols*, and relies on IEEE to disclose "discovery" and "peer-to-peer platform protocols". However, combining IEEE's method of discovery with Doyle's system **would not make sense**. For example, Doyle's client computers, which include a "client control program" are clearly **pre-configured** as "compute nodes" in Doyle's grid. Furthermore, the Doyle reference does not teach or suggest that Doyle's "client computers 11" have any need for discovery of the master computer. Doyle's pre-configured "client computers 11", from Doyle's description, are already aware of the master computer, and thus Doyle's system would have no need for discovery as disclosed in IEEE.

In further regard to claim 1, contrary to the Examiner's assertion, the cited references, alone or in combination, do not teach or suggest *wherein the master node is further configured to, in response to said information about the node, send grid configuration information to the node in accordance with the one or more peer-to-peer platform protocols.* The Examiner cites Doyle, "job computation module", reference character 14 in Fig. 2c, and asserts "determine which mode the program should operate based on the job request message from job request means, 1 in Fig. 2c, and sends it to the available clients", citing Doyle, col. 5, line 64 to col. 6, line 16. Contrary to the Examiner's assertion, Doyle, in the cited portions or elsewhere, does not teach that the master computer 5 sends grid configuration information to the node. Instead, Doyle discloses that the master computer 5 sends "commands and files" to the "selected clients 20" of FIG. 2d. The "selected clients 20" are the same as the "available clients 17" of Fig. 2b and the "client computers 11" illustrated in Fig 2a, or at least a selected subset of the clients 17 and client computers 11. Thus, Doyle's "selected clients 20" that receive "commands and files" (col. 6, lines 21-24) from the master computer are **already pre-configured as "compute nodes" in Doyle's grid.** In FIGs 2c and 2d and the

accompanying discussion that includes the Examiner's cited portions, Doyle clearly discloses that the "commands and files" sent to the "selected clients 20" are intended to configure the selected clients 20 to distribute a portion of **a particular job** to the selected clients 20 for execution, and do not include "grid configuration information" as required in claim 1 of the instant application. This is made clear in col. 6, lines 24-29:

> Each selected client is downloaded with the **job request files** 18 included in the segment group package 19 whose contents are **based on the job request signal 40**. FIG. 2d depicts one select client receiving the files constituting segment group package A, while the other selected client receives the files constituting segment group package B.

Again, Doyle's "selected clients 20" already include the client control program 12 and are already aware of the master computer and thus are already pre-configured as "compute nodes" in Doyle's grid. There is no need for Doyle's master computer to send grid configuration information to the "selected clients 20" so that the selected nodes can "self-configure" as compute nodes in Doyle's grid; Doyle's "selected clients" are already configured as "compute nodes" in Doyle's grid. FIGs 2c and 2d of Doyle simply illustrate the distribution of portions of jobs to the selected clients 20 in Doyle's grid.

In further regard to claim 1, contrary to the Examiner's assertion, the cited references, alone or in combination, does not teach or suggest *wherein the node is further configured to, in response to said grid configuration information received from the discovered master node, self-configure as a compute node in the grid in accordance with the grid configuration information.* The Examiner asserts "availability algorithm, 13 in FIG. 2b, concludes the respective client computer as available clients and qualification algorithm, 45 in FIG. 2b, determines the available clients as a candidate to participate in a distributed computation, see e.g., col. 4, lines 11-27". As noted above, Doyle's "client computers 11" and "available clients 17" are **pre-configured as "compute nodes" in Doyle's grid.** Doyle's client computers 11 in FIG. 2a **already include Doyle's client control program 12**. The Examiner's assertion that Doyle's system, "[the] availability algorithm concludes the respective client computer as available clients and qualification algorithm…determines the available clients as a candidate to

participate in a distributed computation" simply describes Doyle's system determining a set of "selected clients 20" to perform portions of computations for a job. The Examiner's assertion has nothing to do with a *node that is not configured as a compute node in a grid, in response to grid configuration information sent by a discovered master node in the grid, self-configuring as a compute node in the grid in accordance with the grid configuration information received from the discovered master node.*

Applicants also assert that one of ordinary skill in the art would have had no reason to combine the references in the manner proposed by the Examiner. For example, Doyle's client computers, which include a "client control program" are clearly **pre-configured** as "compute nodes" in Doyle's grid. The Doyle reference does not teach or suggest that Doyle's "client computers 11" have any need for discovery of the master computer. Doyle's pre-configured "client computers 11", from Doyle's description, are already aware of the master computer, and thus Doyle's system would have no need for discovery as disclosed in IEEE. Thus, the proposed combination makes no sense. Also, as shown above, the IEEE reference teaches away from master node discovery and does not pertain to the type of system in Doyle. Moreover, the Examiner's stated reason for combining the references is merely conclusory. And in any case, as noted above, the cited references, alone or in combination, do not teach all of the limitations found in claim 1 of the instant application.

Thus, for at least the reasons presented above, the rejection of claim 1 is not supported by the cited art and removal thereof is respectfully requested.

In regard to claim 10, contrary to the Examiner's assertion, the cited references, alone or in combination, do not teach or suggest *a master node configured to communicate with one or more of a plurality of nodes not configured to participate in the grid as compute nodes in accordance with one or more peer-to-peer platform protocols to configure the one or more of the plurality of nodes to participate as compute nodes in the grid computing system*. As discussed above in regard to claim 1, the Doyle reference clearly discloses that Doyle's "client computers" (reference

character 11 in Fig. 2a) are already configured as "compute nodes" in Doyle's "grid". **Thus, there would be no need in Doyle's system for the master computer to communicate with Doyle's client systems to configure the client systems as "compute nodes" in Doyle's "grid".** Doyle's client systems are described as being pre-configured as "compute nodes" in Doyle's "grid". Refer to the above discussion in regard to claim 1 for a more detailed description.

Combining IEEE's method of discovery with Doyle's system **would not result in what is recited in claim 10 of the instant application**. For example, Doyle's client computers, which include a "client control program" are clearly **pre-configured** as "compute nodes" in Doyle's grid. The Doyle reference does not teach or suggest that any need for "discovery of all neighbor devices." Doyle's pre-configured "client computers 11", from Doyle's description, are already aware of the master computer, and thus Doyle's system would have no need for discovery as disclosed in IEEE. **Furthermore, even if the Doyle and IEEE references were properly combinable, the combination would not produce anything like what is recited in claim 10 of the present application.**

Applicants note that neither of the cited references actually provides any motivation to combine the two references. **Moreover, the Examiner's stated reason for combining the references is merely conclusory**. And in any case, as noted above, the cited references, alone or in combination, **do not teach** all of the limitations found in claim 10 of the instant application.

Thus, for at least the reasons presented above, the rejection of claim 10 is not supported by the cited art and removal thereof is respectfully requested.

In regard to claim 14, contrary to the Examiner's assertion, the cited references, alone or in combination, do not teach or suggest *a node, comprising: a processor; and a memory comprising program instructions, wherein the program instructions are executable by the processor to: when the node is not configured to*

participate in a grid as a compute node, discover a master node in accordance with one or more peer-to-peer platform protocols, wherein the master node is configured to manage the grid, wherein the grid comprises one or more compute nodes already configured to participate in the grid; and in response to said discovering the master node, send information about the node to the discovered master node in accordance with the one or more peer-to-peer platform protocols.

The Examiner acknowledges that Doyle does not disclose *discovering the master node in accordance with one or more peer-to-peer platform protocols*, and relies on IEEE to disclose "discovery" and "peer-to-peer platform protocols".

The Doyle reference clearly discloses that Doyle's "client computers" (reference character 11 in Fig. 2a) are already configured as "compute nodes" in Doyle's "grid". In Fig. 2a and in the other Figures and accompanying descriptions, Doyle's "client computers" are always illustrated and described as including the "client control program". At col. 3, lines 50-52, Doyle states (emphasis added):

> The client computer 11 is a computer connected to a generic local or wide area network. **On the client computer** is a small application-independent **client control program** 12 that executes when the client computer is not in normal use.

Doyle describes the client control program in the Abstract:

> An application-independent client control program reports availability of client computers, downloads application program files, invokes the application to compute partial results for a range of computation segments, and uploads the partial results to the master computer.

Doyle's description of the client control program, in the above citations and elsewhere, makes it clear that Doyle's client systems are **pre-configured as "compute nodes" in Doyle's grid system**. The "node" recited in claim 14, at discovery of the master node, **is not configured as a compute node in the grid computing system** as recited in claim 14.

Doyle discloses at col. 4, lines 16-20, in reference to Fig. 2b:

> Each available client sends an availability signal 16 via the network to the master control program. The availability signal indicates the availability of the available client 17 as well as any resource information gathered by the availability algorithm.

Doyle discloses that the "available clients 17" of Fig. 2b are the same clients as the "client computers 11" illustrated in Fig 2a at col. 4, lines 14-16:

> An available client 17 is the same computer as the client computer 11 after the availability algorithm has determined that it is indeed available.

Thus, Doyle's "available client 17" that sends an availability signal 16 to the master control program indicating the availability of the available client 17 as well as any resource information gathered by the availability algorithm is **pre-configured as a "compute node" in Doyle's grid.** The ***node*** *discovering the master node and sending information about the node to the discovered master node*, as recited in claim 14 of the instant application, **is not configured as a compute node in the grid computing system as recited in claim 14**.

Furthermore, the cited art, alone or in combination, does not teach or suggest *a node, in response to discovering the master node, sending information about the node to the discovered master node.* Doyle discloses, at col. 3, lines 58-61 (emphasis added):

> When the client control program is initially activated or is in the idle state, it executes an availability algorithm. The primary function of the availability algorithm is to notify the master computer that the client is available.

Doyle does not teach or suggest, in this citation or elsewhere, that the availability algorithm sends information about the client computer 11 to the master computer **in response to discovering the master computer**. Doyle clearly teaches that the client control program sends availability (and other) information to the master computer when the client control program is initially activated or is in the idle state. Furthermore, Doyle does not teach or suggest that a client computer 11 would have any need to discover the master computer 5. Doyle discloses that the client computer 11 is pre-configured with a

"client control program 12". The above citation discloses that the availability algorithm on Doyle's client computer 11 notifies the master computer that the client is available "when the client control program is initially activated or is in the idle state". Doyle's client computer 11 appears to be already aware of the master computer 5, and thus it would not be necessary for Doyle's client computer to discover the master computer.

The cited references, alone or in combination, do not teach or suggest *a* ***node*** *discovering the master node and, in response to said discovering the master node, sending information about the node to the discovered master node.* The Examiner acknowledges that Doyle does not disclose *discovering the master node in accordance with one or more peer-to-peer platform protocols*, and relies on IEEE to disclose "discovery" and "peer-to-peer platform protocols". However, combining IEEE's method of discovery with Doyle's system **would not result in the above limitation**. For example, Doyle's client computers, which include a "client control program" are clearly **pre-configured** as "compute nodes" in Doyle's grid. Furthermore, the Doyle reference does not teach or suggest that Doyle's "client computers 11" have any need for discovery of the master computer. Doyle's pre-configured "client computers 11", from Doyle's description, are already aware of the master computer, and thus Doyle's system would have no need for discovery as disclosed in IEEE.

In further regard to claim 14, contrary to the Examiner's assertion, the cited references, alone or in combination, do not teach or suggest the node *receiving grid configuration information from the master node in accordance with the one or more peer-to-peer platform protocols.* The Examiner asserts "client control program, reference character 12 in Figure 2a, sends to the master computer the existence and configuration of various predetermined resources on the client computer, see e.g. col. 3, line 64 to col. 4, line 10." The "client control program" sending information to the master computer clearly does not teach or suggest the node receiving grid configuration information from the master node.

Contrary to the Examiner's assertion, Doyle, in the cited portions or elsewhere, does not teach that the master computer 5 sends grid configuration information to the node. Instead, Doyle discloses that the master computer 5 sends "commands and files" to the "selected clients 20" of FIG. 2d. Doyle's "selected clients 20" that receive "commands and files" (col. 6, lines 21-24) from the master computer are **pre-configured as "compute nodes" in Doyle's grid.** In FIGs 2c and 2d and the accompanying discussion, Doyle clearly discloses that the "commands and files" sent to the "selected clients 20" are intended to configure the selected clients 20 to distribute a portion of a particular job to the selected clients 20 for execution, and do not include "grid configuration information" as disclosed in claim 14 of the instant application. This is made clear in col. 6, lines 24-29 of Doyle.

Again, Doyle's "selected clients 20" already include the client control program 12 and are already aware of the master computer and thus are pre-configured as "compute nodes" in Doyle's grid. There is no need for Doyle's clients to receive grid configuration information from the master node so that the nodes can "self-configure" as compute nodes in Doyle's grid; Doyle's "selected clients" are already configured as "compute nodes" in Doyle's grid.

In further regard to claim 14, contrary to the Examiner's assertion, the cited references, alone or in combination, does not teach or suggest *wherein the node is further configured to, in response to said grid configuration information, self-configure as a compute node in the grid in accordance with the grid configuration information.* The Examiner asserts "availability algorithm, 13 in FIG. 2b, concludes the respective client computer as available clients and qualification algorithm, 45 in FIG. 2b, determines the available clients as a candidate to participate in a distributed computation, see e.g., col. 4, lines 11-27". As noted above, Doyle's "client computers 11" and "available clients 17" are **pre-configured as "compute nodes" in Doyle's grid.** Doyle's client computers 11 in FIG. 2a **already include Doyle's client control program 12**. The Examiner's assertion that Doyle's system, "[the] availability algorithm concludes the respective client computer as available clients and qualification algorithm…determines

the available clients as a candidate to participate in a distributed computation" simply describes Doyle's system determining a set of "selected clients 20" to perform portions of computations for a job. The Examiner's assertion has nothing to do with and is nothing similar to a *node that is not configured as a compute node in a grid, in response to grid configuration information sent by a discovered master node in the grid, self-configuring as a compute node in the grid in accordance with the grid configuration information.* The cited references, alone or in combination, do not teach or suggest *wherein the node is further configured to, in response to said grid configuration information, self-configure as a compute node in the grid in accordance with the grid configuration information.*

Combining IEEE's method of discovery with Doyle's system **would not result in what is recited in claim 14 of the instant application**. For example, Doyle's client computers, which include a "client control program" are clearly **pre-configured** as "compute nodes" in Doyle's grid. The Doyle reference does not teach or suggest that Doyle's "client computers 11" have any need for discovery of the master computer. Doyle's pre-configured "client computers 11", from Doyle's description, are already aware of the master computer, and thus Doyle's system would have no need for discovery as disclosed in IEEE. **Furthermore, even if the Doyle and IEEE references were properly combinable, the combination would not produce anything like what is recited in claim 14 of the present application.**

Applicants note that neither of the cited references actually provides any motivation to combine the two references. **Moreover, the Examiner's stated reason for combining the references is merely conclusory**. And in any case, as noted above, the cited references, alone or in combination, **do not teach** all of the limitations found in claim 14 of the instant application.

Thus, for at least the reasons presented above, the rejection of claim 14 is not supported by the cited art and removal thereof is respectfully requested.

Regarding claim 18, Applicants traverse the rejection of this claim for at least the reasons given above regarding claim 14.

Regarding claim 19, Applicants traverse the rejection of this claim for at least the reasons given above regarding claim 1.

Regarding claim 27, Applicants traverse the rejection of this claim for at least the reasons given above regarding claim 1.

The Examiner rejected claims 8, 12, 16, 25 and 33 under 35 U.S.C. § 103(a) as being unpatentable over Doyle in view of IEEE as applied to claims 1, 10, 14, 19 and 27, and further in view of Sun Cluster Grid architecture (Sun Cluster Grid Architecture - a Technical White Paper Describing the Foundation of Sun Grid Computing, published by Sun Microsystems on May 2002), and claims 9, 13, 17, 26 and 34 under 35 U.S.C. § 103(a) as being unpatentable over Doyle in view of IEEE as applied to claims 1, 10, 14, 19 and 27, and further in view of JXTA Chapter 1. Since the rejections have been shown to be unsupported for the independent claims, further discussion of these § 103(a) rejections is not necessary at this time.

Applicants also assert that numerous ones of the dependent claims recite further distinctions over the cited art. However, since the rejections have been shown to be unsupported for the independent claims, a further discussion of the dependent claims is not necessary at this time.

CONCLUSION

Applicants submit the application is in condition for allowance, and notice to that effect is respectfully requested.

If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5681-69600/RCK.

Respectfully submitted,

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